

CLAIMS

We claim:

1. An optical interconnect structure comprising:
5 a substrate;
a waveguide formed overlying the substrate;
a reflective structure formed on the substrate and optically aligned with
the waveguide, the structure configured to reflect light between the waveguide and an
optoelectronic device attached to the substrate.
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2. The optical interconnect structure of claim 1, wherein the waveguide
includes a curved portion configured to focus light transmitted between the
optoelectronic device and the waveguide.
- 15 3. The optical interconnect structure of claim 1, wherein the waveguide is
formed of a material selected from the group consisting of silicon oxide, silicon nitride,
polymer material, and glass.
4. The optical interconnect structure of claim 1, wherein the waveguide is
20 formed of doped silicon oxide.
5. The optical interconnect structure of claim 1, wherein the reflective
structure comprises a reflective material layer.
- 25 6. The optical interconnect structure of claim 5, wherein the reflective
material layer includes a material selected from the group consisting of gold, silver or
platinum.

7. The optical interconnect structure of claim 1, wherein the reflective structure comprises a curved surface configured to focus light transmitted between the optoelectronic device and the waveguide.

5 8. The optical interconnect structure of claim 1, wherein the reflective structure is formed using a portion of the substrate.

9. An optical interconnect system comprising the structure of claim 1, the system further comprising a fiber optic cable optically coupled to the waveguide.

10 10. The optical interconnect system of claim 9, further comprising a lens interposed between the optoelectronic device and the substrate.

11. The optical interconnect system of claim 9, wherein the optoelectronic
15 device comprises a light emitting device.

12. The optoelectronic device of claim 11, wherein the light emitting device is a vertical cavity surface emitting laser.

20 13. The optoelectronic system of claim 9, wherein the optoelectronic device comprises a light detecting device.

14. The optoelectronic system of claim 13, wherein the light detecting device comprises a photodiode.

25 15. An optical interconnect structure comprising:
a substrate;
a waveguide, having a curved surface configured to focus light, formed overlying and in contact with the substrate; and

a reflective structure including a reflective material film formed on the substrate, the reflective material film in optical alignment with the waveguide.

5 16. An optical interconnect structure comprising:
a substrate;
a waveguide overlying and in contact with the substrate;
a reflective structure, including a curved surface configured to focus light, formed on the substrate, the reflective structure in optical alignment with the waveguide.

10 17. A method of forming an optical interconnect structure, the method comprising the steps of:
providing a substrate;
forming a waveguide having a curved surface on a surface of the
15 substrate; and
forming a reflective structure in optical alignment with the waveguide on a surface of the substrate.

20 18. A method of forming an optical interconnect structure, the method comprising the steps of:
providing a substrate;
forming a waveguide on a surface of the substrate; and
forming a reflective structure, having a curved surface configured to focus light, in optical alignment with the waveguide on a surface of the substrate.

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